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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/662,662
Filing Date	September 15, 2003
First Named Inventor	Simon Anne de Molina, et al.
Art Unit	3683
Examiner Name	Thomas Williams
Total Number of Pages in This Submission	
Attorney Docket Number	1316N-001683

ENCLOSURES ***(check all that apply)***

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☒ Amendment / Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
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- ☐ CD, Number of CD(s) _____
- ☐ After Allowance Communication to Technology Center (TC)
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- ☒ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) *(please identify below)*:

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Remarks

The Commissioner is hereby authorized to charge any additional fees that may be required under 37 CFR 1.16 or 1.17 to Deposit Account No. 08-0750. A duplicate copy of this sheet is enclosed.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm *or* Individual name	Harness, Dickey & Pierce, P.L.C.	Attorney Name Michael J. Schmidt	Reg. No. 34,007
Signature			
Date	July 20, 2006		

CERTIFICATE OF TRANSMISSION/MAILING

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EV 855 009 519 US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	10/662,662
Filing Date:	September 15, 2003
Applicant:	Simon Anne de Molina, et al.
Group Art Unit:	3683
Examiner:	Thomas Williams
Title:	SHOCK ABSORBER STAGED VALVING SYSTEM
Attorney Docket:	1316N-001683

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE

Sir:

In response to the notification mailed July 10, 2006, enclosed is a revised copy of the Appeal Brief which contains a concise explanation of the subject matter defined in each independent claim involved in the appeal referring to the specification and the drawings.

Entrance of the Appeal Brief is respectfully requested.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: July 20, 2006

By: _____
Michael J. Schmidt, 34,007

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Group Art Unit:	3683	
Examiner:	Thomas Williams	**APPEAL BRIEF**
Appellant:	Simon Anne de Molina, et al.	**Appeal No.**
Serial No.:	10/662,662	
Filed:	September 15, 2003	
For:	SHOCK ABSORBER STAGED VALVING SYSTEM	
Attorney Docket:	1316N-001683	

Michael J. Schmidt

For Appellants

APPELLANTS' REVISED APPEAL BRIEF

TABLE OF CONTENTS

Dear Sir:

This is an Appeal from the October 18, 2005 Final Rejection of Claims 1, 3-7 and 9-23 of the above referenced application. None of the claims have been allowed. Claims 2 and 8 were cancelled during the prosecution of the application.

Claims 1, 3-7, 10, 11 and 13-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ergun (U.S. Pat. No. 4,823,922) in view of Henry-Biabaud (U.S. Pat. No. 3,432,008).

Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ergun in view of Henry-Biabaud as applied to claim 1 above, and further in view of Harper, et al. (U.S. Pat. No. 4,596,321).

Claims 20, 21 and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ergun in view of Henry-Biabaud and in view of Katz (U.S. Pat. No. 4,624,346).

Claim 22 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ergun in view of Henry-Biabaud and Katz as applied to claim 20 above, and further in view of Harper, et al. (U.S. Pat. No. 4,596,321).

REAL PARTY OF INTEREST

Tenneco Automotive Operating Company, Inc. is the real party in interest, being the assignee of the present Assignment. The Assignment was recorded with the United States Patent and Trademark Office on September 8, 2003 on Reel 014508, Frame 0276.

RELATED APPEALS AND INTERFERENCES

To the best of Appellants' knowledge, no other appeals or interferences are pending which will directly affect, be directly affected by or have a bearing on the Board's decision in the present pending appeal.

STATUS OF THE CLAIMS

Claims 1, 3-7, 10, 11 and 13-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ergun (U.S. Pat. No. 4,823,922) in view of Henry-Biabaud (U.S. Pat. No. 3,432,008).

Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ergun in view of Henry-Biabaud as applied to claim 1 above, and further in view of Harper, et al. (U.S. Pat. No. 4,596,321).

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Claim 22 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ergun in view of Henry-Biabaud and Katz as applied to claim 20 above, and further in view of Harper, et al. (U.S. Pat. No. 4,596,321).

Claims 2 and 8 have been cancelled.

The rejection of Claims 1, 3-7 and 9-23 is the subject of the present appeal.

The rejection of Claims 20, 21 and 23 is also the subject of the present appeal.

STATUS OF THE AMENDMENTS

A Final Office Action was mailed on October 18, 2005.

Applicant filed a response to the Office Action on January 17, 2006 without amending the claims.

An Advisory Action was mailed on February 6, 2006 stating that the request for reconsideration was considered but the Examiner felt it did not place the application in condition for allowance.

On February 15, 2006, Applicant filed a Notice of Appeal and Pre-Appeal Brief Review Request.

The Examiner mailed a Notice of Panel Decision from the Pre-Appeal Brief Review on March 20, 2006 maintaining the rejections.

SUMMARY OF CLAIMED SUBJECT MATTER

Referring to Figures 1, 2 and 4 and to paragraphs [0022] and [0023] on page 6, line 20 to page 7, line 23, Claims 1, 11 and 17 define a shock absorber (10) having a piston (12) which includes a first face and an opposing second face. A plurality of single direction valves (18, 18', 19, 19') are attached to the piston. At least two compression valves (18, 18') control fluid flow through two fluid passages during a compression stroke and at least two rebound valves (19, 19') control fluid flow through two other fluid passages during a rebound stroke. Each of the compression valves (18, 18') and each of the rebound valves (19, 19') actuate at different fluid pressures. This allows for a sequential opening of the compression and/or rebound valves as the fluid pressure in the working chamber increases.

As illustrated in Figure 2, each of the single direction valves includes a pin (25, 46) having a threaded end, a compressible device (34, 48) connected to the pin and urging the valve into a closed position, and a fastener or threaded nut (30) threaded onto the threaded end of the pin. The threaded nut being operable to vary the preload of the compressible device to adjust the pressure that the valve will open. It thus becomes possible to define the desired damping characteristics or damping curves of the shock absorber.

Referring to Figures 1, 2 and 4 and to paragraphs [0022] and [0023] on page 6, line 20 to page 7, line 23, Claim 20 defines a method to dampen an automobile vehicle ride deflection, the vehicle having at least one shock absorber (10) having a piston (12) with a first face and an opposing second face. The

method comprises orienting at least two single direction rebound valves (18, 18') with select passages (44) of the piston (12) to open toward the first face of the piston (12); arranging at least two single direction compression valves (19, 19') with select passages (44) of the piston (12) to open toward the second face of the piston (12); the compression valves (19, 19') are separate from the rebound valves (18, 18'); rotating a nut (30) to adjust each of the rebound valves (18, 18') to open sequentially upon exposure to a predetermined set of increasing first face fluid pressures; and preconditioning each of the compression valves (19, 19') to open sequentially upon exposure to a predetermined set of increasing second face fluid pressures.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellant presents the following issues for review:

1) Claims 1, 3-7, 10, 11 and 13-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ergun (U.S. Pat. No. 4,823,922) in view of Henry-Biabaud (U.S. Pat. No. 3,432,008).

2) Claims 20, 21 and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ergun in view of Henry-Biabaud and in view of Katz (U.S. Pat. No. 4,624,346).

ARGUMENT

The Examiner's position is that Ergun teaches a shock absorber comprising a tube forming a pressure chamber and a piston assembly slidably engaging the tube. The piston assembly has a plurality of single direction valves including at least two single direction rebound valves and at least two single direction compression valves. The Examiner then cites column 5, lines 46-47 to support his position that Ergun "is broadly interpreted to teach the valve as being capable of actuating at a different individually adjustable rebound valve opening pressure and at a different individually adjustable compression valve opening pressure."

Column 5, lines 46-47 states that valve springs and pins can be modified to affect the desired damping characteristics. The Examiner interprets this as defining that each separate valve assembly can be set to a different pressure opening setting. The Examiner has conveniently left out the sections of Ergun that teach against this interpretation. In column 1, lines 34-37 in describing the first aspect of the invention, Ergun states that the rebound and compression valve assemblies are geometrically identical. In column 6, lines 42-47, Ergun describes one of the advantageous features of the piston assembly. The advantageous feature is the interchangeability of the components of the piston assembly. The interchangeable components of the piston assembly simplify the assembly of the piston assembly. Finally, in Claim 1 (column 8, lines 51-53), Ergun defines "a series of identically dimensionally configured valve assemblies positioned within said valve openings". Thus, it is clear that Ergun teaches away

from different pressure openings and Ergun cannot be broadly interpreted as having each valve assembly open at a different fluid pressure.

A prior art reference must be considered in its entirety, i.e. as a whole, including portions that would lead away from the claimed invention. WL Gore & Associates, Inc. v Garlock, Inc., 721 F2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). Here the Examiner has cited portions of the specification which, when "broadly interpreted" appear to teach the applicants' invention. But, when Ergun is taken as a whole, including the portions that clearly lead away from applicants' invention, the portion cited by the Examiner does not teach applicants' invention and the broad interpretation assumed by the Examiner is not allowed under 35 U.S.C. § 103.

The Examiner continues with his rejection by stating that Ergun fails to teach adjustable valves but Henry-Biabaud (U.S. Patent No. 3,432,008) teaches a means of easily adjusting the preload of the valve and thus the opening pressure. Henry-Biabaud discloses a pin (3), a compressible device (17) and a nut (19) threadingly engaging the pin where the nut is operable to vary the preload on the compressible device. As defined by Henry-Biabaud in column 1, lines 68-71, the single compression valve (3) is of the same design as the rebound valve (3a) and it differs only by its adjustment. The valves of Henry-Biabaud each incorporate a sequential opening of valves. As defined in column 2, lines 34-43, if the speed of piston (22) remains below a predetermined value, flow occurs through two paths, one in each valve. As defined in column 2, lines 44-55, if the speed of the piston (22) increases sufficiently, secondary valve (6)

opens to allow fluid flow. As defined in column 2, line 66 to column 3, line 2, if the speed of piston (22) becomes particularly high, main valve 3 will open to allow fluid flow. Thus, each valve of Henry-Biabaud includes a bleed flow, a first valve opening at a first pressure and a second valve opening at a second pressure. The adjustment nuts 4 and 19 can be set to tune compression and/or rebound damping.

Claim 1 of the present invention, as illustrated in Figures 1 and 2 and described in paragraphs [0022] (page 6, line 20 to page 7, line 11), [0023] (page 7, line 12 to page 7, line 23) and [0025] (page 8, lines 9 to page 8, line 19) defines a plurality of single direction valves including at least two single direction rebound valves (18, 18') and at least two single direction compression valves (19, 19'). Each of the single direction rebound valves (18, 18') and each of the single direction compression valves (19, 19') are connectable to at least one of the fluid passages (44) and actuates at a different individually adjustable opening pressure. In addition, each valve includes a pin (25), a compressible device (34) and a threaded nut (30) operable to vary the preload. Claims 3-7, 9 and 10 depend on Claim 1.

The Examiner's position is that it would have been obvious to one of ordinary skill in the art to have utilized the adjustable valve taught by Henry-Biabaud in the piston assembly of Ergun to vary the preload in Ergun rather than to have to modify parts as currently envisioned by Ergun.

As stated above, Ergun does not disclose, teach or suggest having valves that open at different fluid pressures as suggested by the Examiner. All of the

valves of Ergun are designed to be identical and nothing is disclosed regarding valves of different opening pressures. Thus, there is nothing in Ergun or Henry-Biabaud which suggests replacing each of the identical rebound and identical compression valves with the adjustable valve of Henry-Biabaud. The Examiner's position is that this would reduce the number of parts in Ergun. This is clearly not the case. Currently, each valve in Ergun includes a valve head 122, a valve pin 124, a valve spring 126 and a valve spring clip 130 or four components. Each valve in Henry-Biabaud includes a valve body 3, a socket 9, a valve body 6, a spring 5, a nut 4, a spring 17 and a nut 19 or seven components. Clearly, replacing the six valves of Ergun (see Fig. 22) with the valves disclosed in Henry-Biabaud does not reduce the required parts as stated by the Examiner, it significantly increases the number of parts (from twenty-four to forty-two) and complexity of the assembly.

There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art and the knowledge of persons of ordinary skill in the art. In re Rouffet, 149 F.3d 1350, 1357 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998). The problem being solved by Ergun is providing a vehicle shock absorber capable of large damping forces for extended periods of time (column 1, lines 6-10). This is accomplished by having identical valves and nothing in Ergun suggests sequential opening of these valves. The problem being solved by Henry-Biabaud is providing a shock absorber whose characteristics remain constant with time and scarcely subject to variations in case of changes in the fluid temperature (column 3, lines 8-11).

Thus, these two references clearly are not directed towards the solving of the same problem.

The C.C.P.A. addressed the required standards for combining references under Section 103in the case of In re Meng and Driessen, 492 F.2d 834, 181 USPQ 94 (C.C.P.A. 1974). In the Meng case, Chief Judge Markey stated that although an invention may appear to be rendered obvious by a disclosure in the prior art reference, such a holding of obviousness is not proper when the disclosure occurs in a reference that is not directed toward the same problem as that addressed by the invention. Judge Markey further cautioned that the teachings or suggestions of such a reference must be evaluated without the use of hindsight gleaned from the applicants' disclosure, and thus must be viewed in a vacuum so far as the applicants' invention is concerned. 181 USPQ at 97.

Applicants submit that the proper test for evaluating prior art under 35 U.S.C. Section 103 is whether or not the prior art, either individually or taken together, can be seen as suggesting the applicants' solution to the problem which the invention addresses. See: Rosemont, Inc. v. Beckman Instrument, Inc., 221 USPQ 1, 7, (Fed. Cir. 1984). The scope of pertinent prior art has been defined as that reasonably pertinent to the particular problem with which the inventor was involved. See: Lindemann Machinefabrik GMBH v. American Hoist and Derrick Co., 221 USPQ 481, 487 (Fed. Cir. 1984). Applicants assert that the use of hindsight in picking and choosing isolated elements from various pieces to the problems addressed by applicants' invention is improper according to the above-discussed judicial standards governing the proper application of 35 U.S.C.

Section 103.

The teachings of the prior art do not provide motivation for combining these references. As discussed above, Ergun teaches identical valves and does not teach adjustable valves so there is nothing which would motivate someone to add the adjustable valves of Henry-Biabaud to Ergun.

It is respectfully submitted that the Examiner is using an improper approach to reject applicants' claims. The law is clear that there must be some suggestion or incentive to use the construction defined in applicants' claims. For example, the Court of Appeals for the Federal Circuit in ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577 (Fed. Cir. 1984) stated:

> Obviousness cannot be established by combining the teachings in the prior art to produce the claimed invention, absent same teaching or suggestion supporting the combination. Under Section 103, teachings of references can be combined only if there is some suggestion or incentive to do so.

See also, In re Gordon, 733 F.2d 900, 902 (Fed. Cir. 1984) where the court stated:

> The mere fact that the prior art could be modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.

It is submitted that the Examiner has failed to prove that there is some suggestion or teaching in the references that would provide the practitioner with a motivation to combine their respective teachings to arrive at applicants' claimed invention.

Finally, knowledge of persons of ordinary skill in the art also does not provide the motivation for combining these references. The Examiner attempts

to justify the combination by stating that the adjustable valves of Henry-Biabaud would make it easier to adjust the valve in Ergun and it would reduce the number of parts. As discussed above, the valves of Ergun are identical and are not adjustable. Also, the substitution of the Henry-Biabaud valves would significantly increase the number of pieces and the complexity of the assembly. Thus, there is no motivation for combining these references.

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). Se also In re Lee, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Claim 11 of the present invention, as illustrated in Figures 1 and 2 and described in paragraphs [0022] (page 6, line 20 to page 7, line 11), [0023] (page 7, line 12 to page 7, line 23) and [0025] (page 8, line 9 to page 8, line 19), defines at least two single direction rebound valves (18, 18') and at least two single direction compression valves (19, 19'). The two single direction rebound

valves (18, 18') control flow of the fluid from the first working chamber (22) to the second working chamber (23). The two single direction compression valves (19, 19') control flow of the fluid from the second working chamber (23) to the first working chamber (22). Each of the single direction rebound valves (18, 18') actuates at different individually adjustable rebound valve opening pressures. Each of the single direction compression valve (19, 19') actuates at a different individually adjustable compression valve opening pressure. In addition, each valve includes a pin (25), a compressible device (34) and a fastener (30) to vary the preload. Claims 12-16 depend from Claim 11.

The Examiner's position and the arguments presented above also apply to Claim 11.

Claim 17 of the present invention, as illustrated in Figures 1 and 2 and described in paragraphs [0022] (page 6, line 20 to page 7, line 11), [0023] (page 7, line 12 to page 7, line 23) and [0025] (page 8, lines 9 to page 8, line 19) defines a plurality of single direction valves including at least two single direction rebound valves (18, 18') and at least two single direction compression valves (19, 19'). Each of the single direction rebound valves (18, 18') and each of the single direction compression valves (19, 19') are connectable to at least one of the fluid passages (44) and actuates at a different individually adjustable opening pressure. In addition, each valve includes a pin (25), a compressible device (34) and a fastener (30) operable to vary the preload. Claims 18 and 19 depend from Claim 17.

The Examiner's position and the arguments presented above also apply to

Claim 17.

Claim 20 as illustrated in Figures 1 and 2 and described in paragraphs [0022] (page 6, line 20 to page 7, line 11), [0023] (page 7, line 12 to page 7, line 23) and [0025] (page 8, lines 9 to page 8, line 19) is a method claim which defines orienting at least two single direction rebound valves (18, 18') with select passages (44) of the piston (12); arranging at least two single direction compression valves (19, 19') with select passages (44) in the piston (12); rotating a nut (30) to adjust each of the rebound valves (18, 18') to open sequentially upon exposure to increasing pressures; preconditioning each of the compression valves (19, 19') to open sequentially upon exposure to increasing pressures.

The same prior art, Ergun and Henry-Biabaud was cited against Claim 20. Thus, the Examiner's position and the arguments presented above also apply to Claim 20. Claims 21-23 depend from Claim 20.

CONCLUSION

Applicants respectfully request the rejections of the Examiner be withdrawn and the allowance of the pending claims.

Respectfully submitted,

Dated: July 20, 2006

By: _____
Michael J. Schmidt, 34,007

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APPENDIX A

PENDING CLAIMS

1. A shock absorber piston assembly, comprising:

a shock absorber piston having a first face and an opposed second face;

a plurality of fluid passages extending between the first face and the second face; and

a plurality of single direction valves attached to the piston, including:

at least two single direction rebound valves, each connectable to at least one of the fluid passages; and

at least two single direction compression valves, each connectable to at least one of the fluid passages;

wherein each of the single direction rebound valves actuates at a different individually adjustable rebound valve opening pressure, each of the single direction compression valves actuates at a different individually adjustable compression valve opening pressure and each of the single direction valves comprises:

a pin having a threaded connection end;

a compressible device connectable to the pin, the compressible device creating a preload to urge the valve into a closed position; and,

a fastener fastened to the threaded connection end, the

fastener operably engaging the compressible device, the fastener comprising a threaded nut threadingly received on the threaded connection end, the threaded nut operable to vary the preload of the compressible device.

2. (cancelled)

3. The piston assembly of Claim 1, wherein each of the compressible devices comprises a spring defining a spring rate selectable to vary the valve opening pressure.

4. The piston assembly of Claim 1, wherein each compressible device of each rebound valve comprises a coiled spring defining a spring rate selectable to vary the valve opening pressure between individual ones of the rebound valves.

5. The piston assembly of Claim 1, wherein each compressible device of each compression valve comprises a coiled spring defining a spring rate selectable to vary the valve opening pressure between individual ones of the compression valves.

6. The piston assembly of Claim 1, comprising a bleed disc included with at least one of the valves.

7. The piston assembly of Claim 1, wherein each of the valves further comprises:

a washer slidably connected with the threaded pin connection end, the washer being located between the fastener and the compressible device.

8. (cancelled)

9. The piston assembly of Claim 7, comprising at least one shim disc disposed between the washer and the compressible device to vary a preload of the compressible device.

10. The piston assembly of Claim 1, comprising:

a shock absorber fluid in contact with both the first face and the second face;

wherein each of the rebound valves is operable to control a first direction flow of the shock absorber fluid from the first face toward the second face; and

wherein each of the compression valves is operable to control a second direction flow of the shock absorber fluid from the second face toward the first face.

11. A shock absorber, comprising:

a tube forming a pressure chamber and operably containing a fluid;

a piston assembly slidably positionable within the tube, the piston assembly dividing the pressure chamber into a first working chamber and a second working chamber, the piston assembly including:

(i) a piston defining a plurality of fluid passages extending between the first working chamber and the second working chamber;

(ii) at least two single direction rebound valves attached to the piston operably controlling a flow of the fluid from the first working chamber to the second working chamber; and

(iii) at least two single direction compression valves oppositely attached to the piston from the rebound valves, the compression valves operably controlling a flow of the fluid from the second working chamber to the first working chamber;

wherein each of the single direction rebound valves actuates at a different individually adjustable rebound valve opening pressure, each of the single direction compression valves actuates at a different individually adjustable compression valve opening pressure and each of the single direction rebound valves and the single direction compression valves comprises:

a pin having a threaded connection end;

a compressible device connectable to the pin, the compressible device creating a preload to urge the valve into a closed position; and,

a fastener fastened to the threaded connection end, the fastener

operably engaging the compressible device, the fastener comprising a threaded nut threadingly received on the threaded connection end, the threaded nut operable to vary the preload of the compressible device.

12. The shock absorber of Claim 11, wherein the fluid comprises a gas.

13. The shock absorber of Claim 11, wherein the fluid comprises a hydrocarbon based liquid.

14. The shock absorber of Claim 11, wherein each of the rebound valves and the compression valves further comprise:

a washer mechanically linking the compressible device to the pin; and

a valve plate engageable with the piston operably sealing one of the fluid passages of the piston in a closed position of one of the rebound valves and the compression valves.

15. The shock absorber of Claim 14, wherein the piston comprises a land adjacent each of the fluid passages, each land operably engaged by the valve plate in the closed position of one of the rebound valves and the compression valves.

16. The shock absorber of Claim 14, wherein the compressible device comprises a spring.

17. A shock absorber, comprising:

a piston tube;

a piston assembly slidably disposed within the piston tube and operably dividing the piston tube into a first working chamber and a second working chamber, the piston assembly including:

a shock absorber piston having a first face and an opposed second face;

a plurality of fluid passages extending between the first face and the second face; and

a plurality of single direction valves attached to the piston, including:

at least two single direction rebound valves, each connectable to at least one of the fluid passages; and

at least two single direction compression valves, each connectable to at least one of the fluid passages; and

a piston rod fastenably attached to the piston assembly, wherein each of the single direction rebound valves actuates at a different individually adjustable rebound valve opening pressure, each of the single direction compression valves actuates at a different individually adjustable compression valve opening pressure and each of the plurality of valves comprises:

a pin having a threaded connection end;

a compressible device connectable to the pin, the compressible device being creating a preload to urge the valve into a closed position; and,

a fastener fastened to the threaded connection end, the fastener operably engaging the compressible device, the fastener comprising a threaded nut threadingly received on the threaded connection end, the threaded nut operable to vary the preload of the compressible device.

18. The shock absorber of Claim 17, wherein the piston rod comprises a first end fitting adapted to connect to an automobile vehicle.

19. The shock absorber of Claim 17, comprising:

a tubular end slidably disposed over both the piston tube and a freely extending end of the piston rod; and

a second end fitting fixedly connectable to the freely extending end of the piston rod and operably connecting the shock absorber to a vehicle body of an automobile vehicle.

20. A method to dampen an automobile vehicle ride deflection, the vehicle having at least one shock absorber, each shock absorber having a piston with a first face and a second face and a plurality of through fluid passages, the method comprising:

orienting at least two single direction rebound valves with select

fluid passages of the piston to open toward the first face of the piston;

arranging at least two single direction compression valves with select fluid passages of the piston to open toward the second face of the piston the at least two single direction compression valves being separate from the at least two single direction rebound valves;

rotating a nut to adjust each of the rebound valves to open sequentially upon exposure to a predetermined set of increasing first face fluid pressures; and

preconditioning each of the compression valves to open sequentially upon exposure to a predetermined set of increasing second face fluid pressures.

21. The method of Claim 20, comprising preloading a spring in each of the compression valves and the rebound valves during the rotating and the preconditioning steps.

22. The method of Claim 20, comprising shimming at least one of the compression valves and the rebound valves.

23. The method of Claim 20, comprising varying a diameter of at least one of the fluid passages.

Evidence: None

Related Proceedings: None